



**OPEN EDUCATIONAL RESOURCES (OER)
OPPORTUNITIES FOR ONTARIO**

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FOREWORD Openness is the breath of life for education and research¹.

The growing movement to provide open educational resources (OER)* for post-secondary institutions is an exciting one that holds much promise for higher education in general and for today's Ontario in particular. A natural partner to online learning, it has the potential to be an important component of ongoing efforts to enhance the overall learning experience for students pursuing college or university credentials and provide them more flexibility and reduced expenses, broaden accessibility, improve quality, revitalize university and college teaching, encourage cross-institutional collaboration and more effective use of educational resources.

At the same time, as the latest in a long series of “movements” in education, it is not yet well known or understood. Even though its principles are consistent with long-standing academic traditions, it can seem counter-intuitive to institutional leaders and faculty members to share intellectual property freely in times of enhanced competition among colleges and universities. Efforts to adopt OER on a major scale may also fall short of expectations simply because beleaguered college and university executives and faculty members are preoccupied with workload and resource issues and don't see OER strategies as part of an effective way to address them.

Here, we set out the case for OER and how their adoption can benefit all the key stakeholders in post-secondary education in Ontario. We then consider the challenges that such changes pose for the various groups and suggest ways that these can be met.

Links to original sources for a more thorough scrutiny of the OER movement around the world are included throughout the text.

* The term OER will be used both in the singular and the plural in the text – in the plural when referring to “open educational resources” and in the singular when referring to the concept.

AN OVERVIEW OF OER: DEFINITIONS AND PRINCIPLES

There are a number of regularly cited definitions of Open Educational Resources. The following are representative:

...the open provision of educational resources enabled by information and communication technologies, for consultation, use, and adaptation by a community of users for non-commercial purposes. (UNESCO, 2002)

...teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials or techniques used to support access to knowledge. (William and Flora Hewitt Foundation, 2008)

...digitised materials offered freely and openly for educators, students and self-learners to use and re-use for teaching, learning and research. (Hylén, 1)

OER include learning content (full courses, content modules, learning objects, collections and journals); software tools to support the development, use, re-use and delivery of learning content (including search engines, learning management systems, content development tools and online learning communities); and implementation resources (intellectual property licenses, design principles of best practice and localization of content.)²

The two most important aspects of openness have to do with free availability over the Internet and as few restrictions as possible on the use of the resources. There should be no technical barriers (undisclosed source code), no price barriers (subscriptions, licensing fees, pay-per-view fees) and as few legal permission barriers as possible (copyright and licensing restrictions) for the end-user. The end-user should be able, not only to use or read the resource, but also to adapt it, build upon it and thereby re-use it, given that the original creator is attributed for his/her work.³

Like Wikipedia and open-source software, the OER movement constitutes an attempt to transform the conditions of teaching and learning by demonstrating the power of resources that invite participation and that enable contributions to be combined, disassembled, and shared. These initiatives already range widely in both educational level and subject matter.⁴

OER: A VERY SHORT HISTORY

In this section, we highlight some of the most prominent developments in the OER movement. A more complete and comprehensive history is readily available from the cited sources.⁵

While the notion of ‘free software’ was being actively pursued earlier⁶, the most frequently cited starting point for the OER movement was the very public launching of the Massachusetts Institute of Technology (MIT) OpenCourseWare (OCW) project in 2001. The intention was to avoid creating expensive new materials for online learning by openly sharing those that were already being used for classroom-based learning.⁷ This became the first prominent model for open sharing of educational content, leading to the adoption of the term “open educational resources” by the United Nations Educational Scientific and Cultural Organization (UNESCO) in 2002.⁸

The MIT initiative is not a distance education program but a web-based publishing venture. Teachers and students get course materials, lecture notes and even video tapes of actual lectures but MIT does not award credits or degrees for the use of these materials. The response has been overwhelming, not only in North America, but around the world, with hundreds of courses being translated into numerous other languages.⁹

It has been sponsored from the beginning by the William and Flora Hewitt Foundation which has gone on to support many OER initiatives around the world on the basis of a three-part theory of change: sponsoring high quality open academic content, breaking down barriers to open educational content and encouraging the world-wide use of OER.¹⁰ This led to the creation of the OpenCourseWare Consortium in 2005, a collaboration of now more than 100 higher education institutions from around the world.¹¹ There has been widespread and sustained interest in the MIT initiative, one that has not only enhanced the institution's international reputation but extended it to new areas.

Central to the OER movement from the outset was the need to deal with the critical issue of copyright. This was addressed, first by OER pioneer David Wiley and others, with the release in 1999 of the Open Publication License, and then with the establishment of the Creative Commons in 2001 (see Glossary).

A common misconception and the source of some apprehension about the OER movement is that 'openly licensed' content belongs in the public domain and that the author gives up all rights to the material. This is not the case, as Butcher notes:

In fact, the emergence of open licenses has been driven strongly by a desire to *protect a copyright holder's rights* in environments where content (particularly when digitized) can so easily be copied and shared via the Internet without asking permission.¹²

Licensing frameworks like the Creative Commons and the more local BC Commons offer varying degrees of openness to the authors of educational resources, making use of a license generator that suggests the most appropriate license based on a user's response to specific questions regarding how their work can be used. This allows authors to grant other people the right to make copies of their work and/or to make changes to it without seeking permission or, notably to address concerns about others making financial gain from their materials, restricting re-use of the resources for commercial purposes. All of the Creative Commons licenses include basic rights retained by the authors, asserting their right over copyright and the granting of copyright freedoms.¹³

For good overviews of the Creative Commons licenses, see Butcher or Bissell.¹⁴ For a notable Canadian example, BC Commons, see the March 28, 2011 interview by Timothy Vollmer of the Creative Commons with Paul Stacey of BCcampus.¹⁵ Stacey also makes an important distinction between foundation and taxpayer-funded OER which is of particular interest to our government and post-secondary institutions, given the likelihood that most initiatives in the near future will be government-funded¹⁶.

The OpenLearn initiative of the UK Open University took the MIT concept one step further by providing, not only a collection of free course material, but also a set of tools to help authors publish and support collaborative learning communities.¹⁷ Other innovative programs include Rice University's Connexions, which facilitates rearranging modules in a given course with the intention of bringing "the three strands of content, communities and

software together in one intuitive and dynamic teaching environment” and MERLOT (Multimedia Educational Resources for Learning and Online Teaching) at the California State University Centre for Distributed Learning.¹⁸

The number of projects, programs and models has escalated significantly recently, so that even accounts from two or three years ago seem dated. A number of these are listed later in this paper. Yuan et al have an excellent capsule description of many examples of every type of open educational resource initiative.¹⁹

While the widespread use of the term, OER, is only about a decade old, its fundamental principles are rooted in academic traditions that go back centuries. Education is about free inquiry, about the open pursuit of ideas and concepts, exposing them to peer review for comment and refinement in the never-ending pursuit of truth and knowledge. In this sense, a commitment to OER is a reaffirmation of the finest values of education, applying the same principles to the development and use of educational resources for teaching and learning that have long characterized university research around the world.

Nevertheless, it is not always easy to see how an institutional commitment to OER can be of benefit in a very competitive educational environment. Why should anyone give away anything for free? Will market forces encourage or discourage the movement? A recent publication from the Commonwealth of Learning and UNESCO acknowledges these competing forces:

It is unclear which direction educational systems will take. Will OER be co-opted as another in a long line of ultimately failed cost-cutting exercises? Or will it be harnessed as part of a strategy to invest more wisely and effectively in education, in the belief that producing intellectual leadership through free and open development and sharing of common intellectual capital is a worthwhile and socially essential activity for a healthy society?²⁰

It can be argued that the movement to more open sharing of educational resources is inevitable. The Internet has given unprecedented access to information at a time when the value and importance of post-secondary education has never been more recognized around the world. At the same time, information in itself is not necessarily knowledge or learning, and, even though technology has greatly facilitated the informal access to knowledge envisioned by Ivan Illich in his early ‘70’s predictions of “deschooling”²¹, the trend has actually been in the opposite direction. There is more recognition than ever of the importance of a high quality of teaching and learning in our institutions and even more emphasis on credentials and accrediting institutions than there was in Illich’s time.

There is tremendous value in releasing educational materials for general consumption and informal learning but the value of OER to an accredited educational program is still dependent upon institutional reputation and the quality of teaching and learning within the college or university.

Before considering the challenges and barriers to an OER strategy for Ontario, we first set out the benefits of such an investment for the province as a whole and for its respective key stakeholders – government, institutions (and their leaders), faculty and students.

THE BENEFITS OF AN OER STRATEGY:

There is little point in wrestling with the challenges and realities of implementing significant change in today's competitive and fast changing post-secondary educational environment if there is not first full understanding of, and enthusiasm for, the contributions that OER can make to improving the quality and accessibility of post-secondary education in Ontario. There are huge potential benefits of OER initiatives for all of the key stakeholders in higher education, but realizing them will require clear strategies, concerted energies and strong support.

Making openness work productively requires a significant investment of finances, time and energy, but Butler proposes that the investment is more than justified because:

- Investment in designing effective educational environments is critically important to good education.
- A key to productive systems is to build on common intellectual capital rather than duplicating similar efforts.
- All things being equal, collaboration will improve quality.
- As education is a contextualized practice, it is important to make it easy to adapt materials imported from different settings where required – this should be encouraged rather than restricted.²²

Imagine a scenario where three Ontario post-secondary institutions (a Toronto university, a northern college and a university in the Kitchener-Waterloo area) have very similar introductory courses in political science. Representatives of each, meeting at a conference, agree that these are in serious need of updating and, stimulated by a presentation on open educational resources, agree to collaborate in an OER strategy to revitalize their respective courses. The Kitchener-Waterloo area professor has a stellar reputation in this field and a great deal of experience with online course development. The other two have good political science departments but are very new to online courses.

Using a Creative Commons vehicle, the Kitchener-Waterloo university offers its online introductory political science course as OER to the other two. Over the next couple of years, faculty at the latter institutions adapt the materials to their respective contexts and gradually blend in their own educational materials as part of the process, always acknowledging the original creators of the intellectual property. The new materials include some innovative simulation exercises, YouTube videos illustrating issues in the course, and some revisions of the textual materials originally prepared. The northern college develops a couple of fascinating modules involving aboriginal leaders in its community and these, in turn, are quickly adapted for the Toronto and Kitchener-Waterloo area courses which previously had no such materials.

Throughout the process, there are ongoing discussions of the strengths and weaknesses of each course across the network. Because the materials are free and readily accessible, there is more incentive for faculty members to revise their courses on a regular basis. A huge spinoff benefit of this process is that it encourages inter-institutional networking and collaboration and an enhanced interest in curricula, course development and student support.

Students also play a key role, bringing in content from their own experience, from the Internet and from social networking, thus helping faculty to adapt the courses to their students' own interests and requirements. Course revision becomes an important part of the students' learning as they are much more actively engaged than is normal in a university environment. At

the same time, notwithstanding their abilities at surfing the Internet, most need strong faculty guidance and support in learning how to evaluate the veracity and quality of the overwhelming quantity of learning materials, to understand and interpret their meaning and hence to apply what they have learned to their individual cases.

Following this sort of example, it is not difficult to envision the benefits of such an approach for Ontario's key higher education stakeholders:

1. For students

One of the intriguing aspects of the OER movement is the opportunities and encouragement it can provide to college and university students.

Firstly, assuming students have access to a standard personal computer with Internet access and a web browser, it gives them access to free learning materials helping them avoid the high costs of textbooks.

OER can also help students better plan their education by allowing them to try out materials and determine what interests them and what program is best suited to them before enrolling formally. This can help reduce costs further by ensuring the most effective use of money invested in tuition and other educational costs.

Secondly, students uncertain about their commitment to a post-secondary educational program may be able to become familiar with studying at that level without a more formal commitment to an academic program. The Dutch Open University, for example, provides online, self-paced courses for precisely that purpose without the students having to make an immediate financial investment.²³

Thirdly, the practice really encourages students to become more actively involved in coursework than is normally the case in higher education, following the principle that one of the best ways to learn is to teach something.

“The principle of allowing adaptation of materials provides one mechanism among many for constructing roles for students as active participants in educational processes who learn best by doing and creating, not by passively reading and absorbing. Content licenses that encourage activity and creation by students through re-use and adaptation of that content can make a significant contribution to creating more effective learning environments.”²⁴

Given the ease with which members of the digital generation use the latest technologies, and assuming effective faculty guidance and support in developing students' research skills, OER can contribute tangibly and tremendously to the richness of their educational experience. In this way, students can not only enhance their own learning through free access to a wealth of new materials, but they can also bring them to the attention of college and university teachers whose primary references are more structured and formal. The net result may often be revised courses that have a great range of educational resources, many of which have high appeal to younger learners. At the same time, instructor guidance on such crucial issues as the ownership of intellectual property, copyright and plagiarism and learning to ascertain the veracity and source of information is central to the students' learning experience.

2. For faculty members

As noted above, sharing is an academic value – it is very strong for research and it is thus fair to ask why it cannot also be as effective for teaching, course preparation and curriculum development.

Think for a moment about a good college or university teacher. His or her classes are lively, participatory and challenging. They involve much more than the transfer of knowledge from professor to student, regardless of method of educational delivery – lecture, seminar, demonstration, simulation, or case study and whether delivered in person or online. The materials are current, the educational aims and methods of evaluation are clear from the outset and the students take full responsibility for their own learning.

Ready access to well prepared and free course materials in a variety of modes can help such a professor thrive even more. OER make it easier to update courses based on the most recent developments in the field. The most commonly reported motive in a 2006 Organization for Economic Coordination and Development (OECD) survey for why professors got involved in OER was to gain access to the best possible resources and to have more flexible materials.²⁵

According to the 2006 OECD survey, while many faculty had altruistic motives for creating OER, these were usually outweighed by more personal and practical considerations, such as personal and institutional reputations.²⁶

Personal reputation is central to an academic's career, often extending well beyond the boundaries of a given institution, province or even country. Traditionally, the classroom has been the exclusive domain of a professor and only his or her students ever get to see the individual in performance. With today's communication technologies, however, the best courses and units can be shared universally, often enhancing the profile and reputation of the individuals who produce them (much in the same way institutions like MIT, Rice and the United Kingdom's Open University (UKOU) have profited from their own investments in OER).

Sharing OER can also contribute to course quality. Faculty members routinely spend many more hours in course preparation than they do in the actual teaching. Instead of many individuals working independently to produce very similar courses in different institutions, a commitment to OER can help professors focus on adapting materials for their own local environment, or building upon someone else's work to produce an even better course for the future. Free and readily accessible courses and units can also be accessed much more quickly, encouraging more frequent updating and responding to societal changes. Finally, quality may be improved because more people are involved in problem-solving²⁷.

A commitment to OER is to treat course materials like research findings. The original author is cited but those who follow can work to improve the OER, adapting them to correct facts, offer different perspectives or build on them to create new courses.

To lock in learning resources behind passwords means that people in other publicly-funded institutions sometimes duplicate work and reinvent things instead of standing on the shoulders of their peers.²⁸

The provision of special funding for the development of OER will thus benefit, not only immediate college and university faculty applicants, but, in the longer term, the whole system of post-secondary education in the province.

In a 2011 study of the use of OER in higher education in Britain²⁹, Oxford university researchers Masterman and Wild identified the key benefits to individual educators as lying in:

- Enabling resources to be seamlessly integrated into students' learning environments;
- Addressing learners' specific needs through providing opportunities for supplementary learning, skills development and presenting content in different ways to address students' interests and preferences;
- Saving teachers effort, through enabling them to offer their students learning materials and TEL[†] activities where they lack the skills or the means to create these themselves;
- Benchmarking their own practice in terms of content, approach and general quality;
- Enabling them to teach topics that lie outside their current expertise;
- Stimulating networking and collaboration among teachers;
- Improving possibilities for new collaborations in researching fields of common interest.

3. For colleges and universities

Notably in the university sector, research has displaced teaching as the institutional priority in recent decades. However, with ever expanding enrolments, increasingly tight budgets and the challenges of ever growing classes taught by graduate students or sessional instructors, executive heads are paying more and more attention to the quality of teaching and learning and to the undergraduate student experience.³⁰ A driving premise is increasingly that institutional reputations will be tied, not just to institutional history and research success, but to the quality of the student experience on campus. The same forces are evident in colleges as more and more students look to them for practical knowledge and working skills that will enhance their future employment prospects. This underlines the need for comprehensive exposure to first-rate and up-to-date learning materials.

When launching the MIT OpenCourseWare initiative, president Charles Vest cited five reasons for the university's unprecedented action in giving away its course materials for free via the Internet³¹:

1. to advance education and widen access
2. to provide greater opportunity for MIT faculty to see and re-use each other's work
3. to create a good record of materials
4. to increase contact with alumni
5. to help MIT students be better prepared

[†]TEL: Technology Enhanced Learning

That one of the world's pre-eminent research universities would take this bold step created world-wide interest as observers tried to figure out what was in it for the university. There can be little doubt, given the success of the subsequent OCW Consortium and the exploding number of hits on the MIT website that the initiative has paid rich dividends for the university in terms of its prestige and reputation.

A 2007 OECD book³² suggests six main arguments for institutions to engage in OER projects:

1. The altruistic argument that sharing knowledge is a good thing
2. Educational institutions should leverage taxpayer money by allowing free sharing and re-use of resources developed by publicly-funded institutions.
3. Sharing and re-using materials cuts the costs of course development, thereby making better use of existing resources.
4. It is good public relations and can help attract new students to a given institution.
5. New cost recovery models are necessary in the context of the globalization of higher education and the availability of free educational resources on the Internet.
6. Open sharing will speed up the development of new learning resources; stimulate internal improvements, innovation and re-use; and help the institution to keep good records of materials and their internal and external use.

The competition for better teaching and learning will reward the institutions that invest in developing and improving curricula, ongoing programme and course design, planning of contact sessions with students, development and procurement of quality teaching and learning materials, and the design of effective assessment activities.

One cost effective way to facilitate these endeavours is to embrace open licensing. Ahrash Bissell notes, with reference to the popular Connexions music modules:

This material is free – in the sense of having no cost. But, more importantly, the material is free in the sense of being open to sharing, customisation, translation, and virtual collaboration with people who have never met before. How is this freedom achieved? By open licensing.³³

With increasing competition, institutions need to identify new cost-recovery models. The cost of content development can be reduced, through more widespread use of existing course materials, for example, or by fast-tracking a new course using readily available materials. As UNESCO Research Chair in OER Rory McGreal puts it: “you can assemble courses from OER – it cuts down costs and then is an open access course that others can use”.³⁴

As demonstrated most dramatically by MIT, the public image of an institution can be enhanced by its embracing of OER because, for the time being, at least, it is counter to the much more common perception of colleges and universities as closed, protective and competitive institutions. An institution's willingness to share its courseware openly projects confidence in the quality of its work. And by offering its work for free, it shows a commitment to openness, sharing and extending access and opportunity to

those for whom such materials would otherwise not be available. OER's tie-in to the Internet and online learning also reinforces perceptions of the host institution as innovative, responsive and a good corporate citizen.

For some, the move to open sharing of research results and educational materials is a pragmatic response to market forces and a way to combat monopolies like Microsoft and Ipod/Iitunes.³⁵ It is also important to remember that, in most cases, and notably for campus-based colleges and universities, giving away course materials does not threaten them because their real "product" is not the content so much as what they do with it for their students.

...on the teaching and learning side, educational institutions that succeed economically are likely to do so predominantly by understanding that their real potential educational value lies in their ability to provide effective support to students (whether that be in practical sessions, tutorials, individual counselling sessions, or online) and in their ability to provide intelligent assessment and critical feedback to students on their performance (ultimately leading to some form of accreditation).³⁶

4. For Government

There are strong arguments for government involvement in open educational resources. For example, the European Union launched the Lisbon strategy in 2000 to boost investments in human capital through better education and skills development. Given its emphasis on widening participation in higher education, especially in the context of lifelong learning, OER has become an important element in the strategy. There are concrete examples of government support in many jurisdictions, including the United Kingdom, the Netherlands and India.³⁷

Notwithstanding Canada's highly decentralized system of higher education with long-established traditions of institutional autonomy, notably in the university sector, higher education is central to the aspirations of any provincial government in Canada. Our educational policy makers seek to extend accessibility; ensure effective teaching, learning and skill development to foster economic growth, innovation and citizenship; while holding institutions accountable for the quality of student experience and the cost-effective use of public monies. A comprehensive OER initiative helps address each of these priorities.

Accessibility:

In an OER scenario, as part of an online learning strategy, anyone with a computer and web browser has free access to educational materials. This benefits experienced learners who are skilled in information searching and processing but it can also attract new and non-formal learners who can sample materials at minimal cost and try out a course or module before formally enrolling in an educational institution. Freely available OER can also contribute significantly to lifelong learning and bridge the gap between formal and informal/non-formal learning.³⁸

Quality of teaching and learning:

By promoting institutional collaboration and the ongoing adaptation and revision of course materials, the sharing of OER can contribute directly to the quality and variety of learning materials. It can help institutions where a given academic area is very strong to promote this strength in the broader community while institutions with less expertise in the given area can benefit enormously from the new materials. Institutional reputations and peer

reviews of courses are important components of an effective OER strategy. Of course, the quality of educational materials is only one component of effective teaching and learning – it is how they are used that really makes the difference. The advantage of an OER approach is that a great array of learning materials is readily and cheaply available to faculty who can then use and adapt them to their own local needs. By spending less time creating the materials, they are able to focus more on student interaction with them. This whole process has the virtue of focussing institutional and faculty attention on the quality of their courses and related student support, a goal that is espoused by more and more institutional leaders in Ontario today.

Quality of student experience:

The OER approach lends itself readily to the predominant learning styles of younger students today. While they are often experts at social networking and seeking information from the Internet, many need training and guidance in assessing what they find, in learning to challenge the truth and accuracy of what they read or see, and in understanding its application in their personal context. Where students are actively involved in the development and revision of their own courses, the quality of the learning experience can be greatly enhanced. This is much more apt to happen in an OER environment where stimulating and varied educational materials are readily available.

Cost-effectiveness:

OER can help governments encourage partnerships and inter-institutional collaboration in the development of learning materials and sharing of courses and materials thus developed. For example, there are cost and time savings evident in the collaborative example in political science cited earlier in this document. Another approach is for faculty to share in new course development from the outset across two or more institutions, with similar benefits. OER can also help students to save money, notably where free materials are made available instead of increasingly costly text books and lab manuals.

MAJOR CHALLENGES AND BARRIERS TO CHANGE:

As a fledgling movement, barely 10 years old, major OER efforts face a number of readily identifiable challenges.

1. Notwithstanding its rapid growth, OER is still not in the mainstream of college and university course development and so the first challenge is simply to have it much better known and understood.
2. The second challenge is to persuade institutional leaders, faculty and others of the value of OER and to demonstrate how it can help both improve the quality of teaching and learning in a cost-efficient way. This is perhaps the biggest challenge because it involves not only practical concerns but attitudes, philosophies and beliefs, at least some of which may be resistant to the desired change. Time is another significant component of this, given the plethora of demands on faculty members and administrators in colleges and universities.
3. Once the decision has been taken to embrace the OER concept, the third challenge is to identify the barriers to change, both generally and for specific stakeholders.

4. Having identified the barriers, the next step is to devise strategies to remove them, again both generally and for specific groups.

There is evidence that the first challenge is increasingly being addressed. College and university instructors and institutions world-wide are implementing OER strategies for their courses and OER is a popular topic at educational conferences and in academic writing and research projects.

As already noted, the second challenge is a greater one that will be addressed in the longer term by successful OER initiatives that demonstrate quality improvements through collaboration and greater student engagement and as the various stakeholder groups realize the benefits already cited above. The trick is to overcome a natural tendency for university or college professors to resent or resist any challenges to their ownership of their own courses when, in fact, an OER commitment simply provides rich and varied materials that make course development and delivery that much easier.

There is a growing literature on the barriers to the successful implementation of OER, the third challenge identified above. The OECD 2007 publication, *Giving Knowledge for Free*, cites five categories of barriers to using or producing OER³⁹:

1. Technical, such as lack of broadband access
2. Economic, such as inadequate resources to invest in the necessary software and hardware
3. Social, such as a lack of the skills needed to use the technology
4. Policy-oriented, such as the lack of academic recognition of the development of OER by teaching staff
5. Legal, such as the time and expense associated with gaining permission to use third party owned copyright materials or its removal from material for which a third party owns the copyright prior to making them available as OER

It is interesting that none of these really confronts the issue of attitudes towards OER which has already been suggested here to be the primary challenge. One can only interpret that these were the most prominent barriers to change identified by those already committed to the concept. Furthermore, it can be suggested that the five barriers listed are in reverse order of priority, at least as they might apply to Ontario at the present time.

Broadband access is not a significant concern in most parts of the province, except for the more remote northern areas. Institutions and individuals will always have software and hardware needs, but the requirements for accessing OER are within the reach of most Ontarians. This is not to minimize the need for better funding, but more to suggest that the other three variables are a bigger challenge in the present context.

Somewhat ironically, many younger students are more experienced with social networking than are older faculty and staff members. However, while younger students may be more adept than older faculty and staff at surfing the Internet and using a variety of technologies to interact with their peers, students need guidance and support from faculty to learn how to discriminate, assess, use and apply educational resources in the context of their own learning. That is, there are significant educational and training issues for all stakeholders, but the specific requirements are different for different players.

The fourth barrier, the lack of supportive and enabling policy is a significant one for Ontario's colleges and universities, most of which are still in the early stages of online learning, let alone adopting OER. As suggested above and discussed below, one of the most significant areas requiring more supportive policy is the faculty reward system.

The fifth and final barrier identified in the OECD study is copyright and related legal issues around intellectual property. Yuan suggests that the issue of copyright and material is "the root cause of slow development in this field".⁴⁰ Copyright is a particularly thorny issue in Canada right now (as discussed below) and, while the Creative Commons and BC Commons approaches are designed to resolve copyright concerns, this area promises to be one of the most time-consuming and possibly expensive components of an OER initiative.

As was done for the benefits of OER, the barriers to its implementation can be addressed for each primary stakeholder group.

For Students:

In many ways, a widespread commitment to OER should be particularly attractive to students, not only because of the free materials, but also because they are already well versed in surfing the Internet for all sorts of resources. However, in their 2011 Oxford study, Masterman and Wild found a low level of awareness among students about OER even though they demonstrated a preference for online over printed learning materials and those that were most up-to-date. They appreciated the "walled garden" of online resources provided by teachers, but had a continuing need for training in searching for and evaluating them (information literacy). They also found students reluctant to make their own work publicly available on the web, especially where it was being formally assessed.⁴¹

These are barriers that can be gradually overcome as faculty, staff and students learn more about OER and as students are increasingly involved in its creation, adaptation and application as an integral part of their education.

For Faculty:

As with any significant educational movement, there will be a few faculty members in the forefront of change initiatives, the majority who will not be particularly aware of or interested in what is going on, and a few will be openly opposed. This pattern can be applied to the OER movement which is barely 10 years old but evolving rapidly.

Surveys by OECD (2006) and Oxford University (2011) suggest common faculty concerns about OER.

The OECD survey suggested that the single most important policy issue for a large scale deployment of OER in teaching and learning was a lack of faculty time and skills together with the absence of a credible academic reward system.⁴²

With little or no institutional or peer recognition or encouragement, there is little incentive for faculty members to take on the extra burden of developing and refining OER content. The creation of OER should be viewed not as an additional burden but rather as an integrated part of the scholarly endeavour that is useful, first and foremost, to a faculty member's own teaching, scholarship and career.⁴³

This was tied to the more general issue of a perceived lack of interest in pedagogical innovation among faculty for whom research productivity and coping with ever increasing workloads are paramount. A UNESCO/COL paper by Butcher reinforced this point:

...until rewards systems are restructured, there is little prospect for persuading people to change their behaviour.⁴⁴

A second concern that many faculty indicated was about the quality of OER. This is understandable, given the proliferation of information on the Internet and its indiscriminate use by many students. This is not helped by a tendency for some in the OER movement to assume that simply making content freely available for use and adaptation will improve educational delivery, ignoring the obvious reality that content is only one piece of the educational puzzle and that effective use of it demands, among other requirements, good educators to facilitate the process.⁴⁵

If providing free content is understood as just another mechanism to cut costs, its potential to contribute to improving education will be lost and it will be consigned to the long list of faddish jargon and buzzwords that have plagued higher education for so many years. If such a path were to be pursued, OER might well flood educational systems with cheaply available content – some good, some relevant, but much not – without doing anything to develop institutional capacity to deliver cost-effective, high quality educational programmes and courses.⁴⁶

It is thus critically important that the quality issue is dealt with in any OER initiative, through peer review, user ratings, institutional reputation and demonstrated student success. These approaches are discussed further in the last section of this paper. It can also be argued that openness (as opposed to traditionally closed classrooms) is the ultimate guarantor of quality. Highly visible written materials or tools will be much more quickly exposed if they are not up to standard.

With respect to research, some young academics in particular may fear low recognition for open access publications. This is understandable but it misses the point that such publications have significantly increased publishing opportunities in many academic fields. They can be as rigorously peer reviewed as are submissions to the most prestigious journals and are, by definition, more widely available than traditional journals. Much in the way that widely read blog sites have enhanced the academic reputation of their authors (in Canada, for example, Terry Anderson, Tony Bates, Stephen Downes and Paul Stacey on technological applications to education), publication in a widely dispersed open resource might even do more for an individual's career than in a more traditional journal with a much more limited distribution and availability.

Finally, as suggested above, copyright is a significant concern for faculty members considering releasing their own educational resources. It has been possible for most to ignore the issue most of the time, except occasionally with respect to their own research writings, but it is increasingly in the forefront with the rapid development of communications technologies in the past decade.

The OECD survey noted a lack of precision in teachers' conceptualization of OER and intellectual property rights, including a lack of awareness of Creative Commons licensing terms.⁴⁷ The Creative Commons and other licensing approaches are designed to ensure that the ownership of intellectual property is both recognized and protected, but much more work needs to be done before most faculty and others are aware of these initiatives and understand how they work. Butcher suggests that those who ask "why should I share my educational content?" should be aware that the real question is "how can I stay in control of the process of my educational content being shared?" He

also points out that the more useful the content is to students, the more likely it is to be shared, with or without the author's permission.⁴⁸

There are practical problems, even with the Creative Commons approach. There may be difficulties locating appropriate license holders and determining whether a license is applicable or not may require sophisticated (and, therefore, expensive) legal analysis. There may be unintended incompatibility between materials or tools licensed under different licenses or different versions of the same license.⁴⁹ It is small wonder that many academics pay scant attention to these issues.

To help address such matters, the Creative Commons has a Learning Commons division which focuses specifically on education and will provide advice and expertise to the OER community to overcome technical and cultural obstacles and identify lessons learned.⁵⁰

For Colleges and Universities:

Institutional leaders embarking on an OER initiative will face some significant roadblocks to its realization. To be meaningful, it should be a significant component of a renewed focus on teaching, learning and student support, the primary domain of college and university professors. For this reason, a president cannot simply proclaim an institution's interest in the subject but will have to work closely with boards and senates on policy issues and with faculty leaders on the academic implications of an OER initiative.

While there are potential financial savings for institutions as well as faculty and students in an OER approach, there may also be significant costs, notably in the area of copyright where there will be a need for significant in-house expertise on such licensing mechanisms as Creative Commons and the ability to stickhandle through the myriad of legal issues as copyright is being reformed by the Federal Government at the time of writing.

Ultimately, ensuring that faculty are encouraged to undertake and rewarded for OER is the primary institutional challenge in this area.

An important issue for institutional leaders is sustainability. Widespread interest in the notion of OER has meant that there are significant sources of start-up funds through foundations and governments but the longer-term challenge is to integrate the concept into the regular daily operation of the institution or community of institutions. OER is too new a concept for there to be many concrete examples of a sustained commitment but there is a useful list of nine funding models geared to specific needs from Downes⁵¹ and some useful funding strategies from Hylén with reference to alternative models identified by Dkolakia.⁵² Wiley distinguishes between the sustainable production of OER and the sustainable sharing of resources⁵³ and Atkins suggests a number of approaches.⁵⁴

For Government:

With Canada's long-established tradition of institutional autonomy, the challenge to governments seeking changes and improvements to the system is to find the best ways to influence institutional behaviour through policies, funding mechanisms and incentives, and government and community relations. In this sense, the issue of OER is part of the much larger concern of ensuring the most effective and cost-efficient investment of public monies in higher education. Given the potential that a large scale commitment to OER offers for both quality improvement and cost-effectiveness, it should not be difficult to persuade government and ministry leaders to support an OER initiative. The real challenge is to get college and university leaders and their

respective faculties to recognize that potential and initiate such programs in their own institutions.

That is, the biggest challenge for government is to see OER as a priority for policy development and for funding as part of its whole approach to higher education and, having done so, to help persuade (encourage, reward, require) institutions to integrate it into their core programs of teaching and learning.

GLOSSARY

This glossary summarizes more detailed descriptions contained in the sources referenced.⁵⁵ It will be updated regularly.

Access Copyright: Access Copyright was established as a not-for-profit organization in 1988 by a group of authors and publishers with a common and simple objective: to protect the value of their intellectual property by ensuring fair compensation when their works are copied. Copyright is a fundamental issue for OER which can be seen as a creative alternative to Access Copyright. A recent move by Access Copyright to multiply the costs of its blanket copyright clearance for institutions from just over \$5 per student to \$35-45 has been very controversial and has led a significant portion of Canadian universities to allow their contracts with Access Copyright to lapse. At the same time, the Government of Canada is proceeding with a copyright reform bill that has been attempted several times in recent years under several Conservative minority governments but failed to reach a vote before the dissolution of the respective Parliaments. It is anticipated that a new bill will be adopted before the end of 2011 given that it is a priority for the new majority government in Ottawa.

Attribution: identifying the original creator of a published work. May be required by a license if an item is re-used or revised.

Australian Learning and Teaching Council Project (ALTC): formed to provide “an analysis of current policies, resources, examples, alternatives and solutions to facilitate the potential adoption, use and management of Open Educational Resources (OERs) within the higher educational sector.”

BC Commons: Modeled on Creative Commons, its license is applied to content for use and sharing among institutions, faculty and students affiliated with the public post-secondary system in British Columbia.

CETIS: Centre for Educational Technology and Interoperability Standards at JISC in the United Kingdom.

Commonwealth of Learning (COL): an intergovernmental organisation created by Commonwealth Heads of Government to encourage the development and sharing of open learning/distance education knowledge, resources and technologies. COL is helping developing nations improve access to quality education and training.

Connexions: Started in 1999 at Rice University to create a series of self-contained, reusable modules that could be connected in a myriad of ways to form lessons or entire courses. It is highly decentralized and heavily reliant upon volunteers. It attempts to “bring the three strands of content, communities and software together in one intuitive and dynamic teaching and learning environment.”⁵⁶ As of 2008, it contained 5400 modules in several languages.⁵⁷

Copyright: A form of intellectual property that gives the owner (usually the author) of an original work exclusive rights relating to the copying, dissemination and adaptation of the work. Less restrictive copyright licenses are available – see Creative Commons, for example.

Creative Commons (CC): A worldwide licensing framework that provides user-friendly open licenses for digital materials, thus avoiding automatically applied copyright restrictions. It takes account of different copyright laws in different countries or jurisdictions and also allows for different language versions. It makes use of a license generator that suggests the most appropriate license based on a user’s response to specific questions regarding how a work can be used. All CC licences include basic rights

that are retained by the authors while granting others the right to make copies under specified conditions and, sometimes, restrictions.⁵⁸ There is a considerable variety of license available according to commercial or non-commercial use and varying degrees of benefits and limitations.⁵⁹

Distance Education: A set of teaching and learning strategies (or educational methods) that can be used to overcome spatial and/or temporal separation between educators and students. There is not a single mode of delivery. It aims to create a quality learning environment using an appropriate combination of different media, tutorial support, peer group discussion, and practical sessions.

E-Learning: covers a wide set of applications and processes, including computer-based learning, web-based learning, virtual classrooms and digital collaboration. It refers to structured learning opportunities mediated through the use of digital resources (usually combinations of text, audio and visual/video files) and software applications. It may be offered online and synchronously, online and asynchronously or off-line. It can be employed in both contact and distance programs. A lot of e-learning courses harness OER but that does not mean that OER are necessarily e-learning.

Fair Use and Educational Use: (“fair dealing” in Canada): a limitation and exception to the exclusive right granted by copyright law to the author of a creative work, a doctrine in American copyright law that allows limited use of copyrighted material without acquiring permission from the rights holders. Examples of fair use include commentary, criticism, news reporting, research, teaching, library archiving and scholarship. It provides for the legal, non-licensed citation or incorporation of copyrighted material in another author’s work under a four-factor balancing test. The term fair use originated in the United States.

Information and Communications Technology (ICT): A term embracing information technology as well as telecommunication and broadcast media, all types of audio and video processing and transmission and network-based control and monitoring functions.

Inclusive Design: design that is inclusive of the full range of human diversity with respect to ability, language, culture, gender, age, and other forms of human difference.

Interoperability: Given that OER builds heavily on the idea of re-using and repurposing materials created by someone else somewhere else, standards and specifications are important to ensure that resources are searchable across repositories and readily conducive to download, integrate and adapt them across platforms.

IPR: Intellectual Property Rights – a generic term that relates to copyright trademarks, patents and other claims for ownership of a resource, whether or not registered.

JISC: Joint Information Systems Committee. JISC is an organization that supports learning, teaching, research and administration in further and higher education in the United Kingdom.

MERLOT: Multimedia Educational Resources for Learning and Online Teaching, a 40,000 member consortium initiated in 1997 at the California State University Center for Distributed Learning. It is a refractory rather than a repository since it links to materials stored elsewhere. The materials encompass simulations, animation, tutorials, drills and practices, quizzes and tests as well as lectures, case studies, collections, reference materials and podcasts.⁶⁰

MIT: Massachusetts Institute of Technology

OECD: Organization for Economic Cooperation and Development

Online Learning: is web-based learning and, as such, is a subset of e-learning.

Open Access: usually refers either to open access publishing, access to materials via the Internet in such a way that the material is free for all to read and to use (or re-use) to various extents, or to journals which give open access to all or a sizeable part of their articles. Costs are usually born by the authors or their home institution.

OpenCourseWare (OCW): largely synonymous with Open Educational Resources but it may refer to a specific, more structured subset of OER. Defined by the OpenCourseWare (OCW) Consortium as “a free and open digital publication of high quality university-level educational materials. These materials are organized as courses, and often include course planning materials and evaluation tools as well as thematic content.”⁶¹ MIT’s OCW is the best known example and the most copied institutional OER model.⁶² By 2007, there were 1800 courses available with about 200 added each year.⁶³

OpenCourseWare (OCW) Consortium: a 200 member consortium of universities dedicated to sharing course materials openly and freely. Initiated at MIT in 2001, OCW was formally defined in 2005 as “a free and open digital publication of high quality educational materials, organized as courses.”⁶⁴ The model encourages institutions to be involved in some kind of established co-operation for sharing resources with others and to develop a common evaluation framework for all consortium members.⁶⁵

OpenLearn: Initiated at the United Kingdom’s Open University in 2006 as a two-year start-up project to use action research to learn about the potential role and impact of free educational content and an open, web-based learning environment. It used Moodle as the basis of the learning environment with 900 hours of published current content from the UKOU. The site is divided into two parts – LearningSpace aimed mainly at learners and LabSpace mainly for educators. It complements the MIT OCW by providing not only a collection of free course materials but also a set of tools to help authors publish and support collaborative learning communities.⁶⁶

Open Learning/Open Education: Open learning is an approach to education that seeks to remove all unnecessary barriers to learning while aiming to provide students with a reasonable chance of success in an education and training system centred on their specific needs and located in multiple areas of learning.⁶⁷ These concepts go far beyond OER, requiring systematic analysis of assessment and accreditation systems, student support, curriculum frameworks, mechanisms to recognize prior learning, and so on, to determine the extent to which they enhance or impede openness.

Open Licensing: Often mistakenly believed to indicate that an author has given up all rights to a given set of materials when, in fact, the emergence of open licences has been driven strongly by a desire to protect a copyright holder’s rights. A broad spectrum of legal frameworks is emerging, with varying degrees of protection around the Creative Commons approach (a lot more about this to come).

Open Source Learning Management Systems: The growing interest in online learning has been accompanied by the rapid growth of Learning Management Systems which facilitate student access to learning materials and support. Relatively recently, the well-known commercial ventures

(Blackboard which acquired the earlier WebCT, Angel and Desire to Learn) have been joined by Open Source (no licensing fee) LMS, notably Sakai and Moodle. Sakai “is a community source software development effort to design, build and deploy a new Collaboration and Learning Environment (CLE) for higher education”⁶⁸ Moodle is a course management system designed to help educators create effective online learning communities. It has a large and diverse user community with over 100,000 registered users speaking 70 languages in 145 countries.⁶⁹

Open Source Software: Software where the programmer(s) allow access to the ‘source code’ or programming language. Anyone is free to use and/or modify this code for their own purposes.

Open University Learning Design Initiative (OULDI): is intended to develop and implement a methodology for learning design composed of tools, practice and other innovation that both builds upon, and contributes to, existing academic and practitioner research. It has recently attracted JISC funding. As stated on the United Kingdom’s Open University website, “we are interested in providing support for the entire design process; from gathering initial ideas, through consolidating, producing and using designs, to sharing, re-use and community engagement.”⁷⁰

Resource-Based Learning: means moving away from the traditional value of the transmission of knowledge from teacher to student to using instructionally designed resources for tutorials, group discussions and practical work. It can benefit immensely from OER but is not directly related to it.⁷¹

Ressources Éducatives Libres (RÉL): The French term for OER. RÉL-AF refers to a UNESCO initiated OER network in Francophone West Africa initiated in Dakar, Senegal in 2009.

UKOU: The Open University of the United Kingdom. Founded in 1971, it has since become the prototype for open universities around the world, demonstrating conclusively that open admissions and distance education can succeed at the university level.

UNESCO: United Nations Educational, Scientific and Cultural Organization, an agency that promotes education, communications and the arts.

William and Flora Hewitt Foundation: A champion of OER since 2001 when it began to support MIT OpenCourseWare. Associated with most of the high profile initiatives of the past decade, include work with UNESCO, the UKOU, Connexions and others.

NOTES:

- ¹ Hylén, 5
- ² Ibid, 2
- ³ Ibid
- ⁴ Bissell and Boyle, 7
- ⁵ See, for example, Yuan, Li et al; Wiley and Gurrell; Carson (for the MIT experience)
- ⁶ See, for example, Wiley and Gurrell
- ⁷ Carson, 25
- ⁸ D'Antoni, 2009, 5
- ⁹ Bissell and Boyle, 6
- ¹⁰ Ibid
- ¹¹ Yuan, Li, 9
- ¹² Butcher, 8
- ¹³ Ibid
- ¹⁴ Butcher, 48-52; Bissell, 97-106
- ¹⁵ <http://creativecommons.org/weblog/entry/26963>.
- ¹⁶ Stacey (October 26, 2011)
- ¹⁷ Yuan, Li, 8
- ¹⁸ Ibid, 8,9
- ¹⁹ Yuan, 25-34
- ²⁰ Butcher, 39
- ²¹ Illich
- ²² Ibid
- ²³ Schuwer and Mulder, 69
- ²⁴ Butcher, 38
- ²⁵ Hylén, 6
- ²⁶ Giving Knowledge for Free, 66
- ²⁷ Ibid 5
- ²⁸ Ibid
- ²⁹ Masterman and Wild, 2011
- ³⁰ The issue has been taken seriously by AUCC which held a special workshop on “transforming Canadian university undergraduate education in Halifax in March, 2011. Thirteen presidents; 25 vice-presidents, academics or other senior administrators; and 15 student representatives attended.
- ³¹ *Giving Knowledge for Free*, 63
- ³² Ibid, 64-5
- ³³ Bissell, 97
- ³⁴ McGreal, February 7, 2011
- ³⁵ Hylén, 5
- ³⁶ Butcher, 36
- ³⁷ *Giving Knowledge for Free*, 61

- ³⁸ D’Antoni, 5
- ³⁹ Giving Knowledge for Free, 59
- ⁴⁰ Yuan, 16
- ⁴¹ Masterman and Wild, 54
- ⁴² Ibid, 5
- ⁴³ Yuan, 15
- ⁴⁴ Butcher, 39
- ⁴⁵ Ibid, 38
- ⁴⁶ Ibid
- ⁴⁷ Ibid, 53-4
- ⁴⁸ Butcher, 36
- ⁴⁹ Yuan, 17
- ⁵⁰ Ibid
- ⁵¹ Downes, 29-44
- ⁵² Hylén, 9
- ⁵³ Cited in Yuan et al, 15
- ⁵⁴ Atkins et al, 24-5
- ⁵⁵ Two key sources are *Open Educational Resources Infokit* edited by Doug Benshaw (JISC) and *Open Educational Resources – Opportunities and Challenges for Higher Education* by Li Yuan, Sheila MacNeill and Wilbert Kraan
- ⁵⁶ Yuan, Li et al., op.cit. 8.
- ⁵⁷ Wiley, David and Seth Gurrell, “A decade of development...” in *Open Learning*, (2009), 24:1, 14.
- ⁵⁸ Butcher, Neil. Edited by Asha Kanwar and Stamenka Uvall - Trumbli . 2011. *A Basic Guide to Open Educational Resources: Frequently asked questions*. Vancouver: COL-UNESCO, 48.
- ⁵⁹ Ibid, 49-52.
- ⁶⁰ *Giving Knowledge for Free*, op. cit., 44.
- ⁶¹ Ibid, 5.
- ⁶² Yuan, Li et al., op.cit., 7.
- ⁶³ Wiley and Gurrell, op. cit., 15.
- ⁶⁴ Carson, Steve. “The unwallled garden: growth of the OpenCourseWare Consortium, 2001-2008” in *Open Learning* (2009), 24:1, 23.
- ⁶⁵ Yuan, Li et. al., op.cit., 10.
- ⁶⁶ Ibid, 8.
- ⁶⁷ Ibid, 6.
- ⁶⁸ Ganjalizadeh, Saiid and Pablo Molina. “Overview of Open Source Learning Management Systems”, EDUCAUSE Evolving Technologies Committee (September 15, 2006), 3.
- ⁶⁹ Ibid, 4.
- ⁷⁰ www.open.ac.uk/researchprojects/ouldi.
- ⁷¹ Ibid, 7.

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